WHAT IS CLAIMED IS:

1. A manufacturing method for a vortex flowmeter, comprising:

providing unitary flowtubes with larger upstream and downstream flanges, smaller flowtube bores and expanders that provide smooth transitioning from the larger upstream and downstream flanges to the smaller bores; and

providing a flow conditioner in each unitary flowtube that is formed with the upstream flange as a single unitary casting.

2. The method of claim 1, further comprising:

forming the flowtube flanges, the flow conditioner, the expanders, and the bores of each unitary flowtube as a single unitary casting; and

machining the single unitary castings to provide the smooth transitioning.

3. the method of Claim 1, further comprising:

measuring a calibration of each unitary flowtube with the flow conditioners, expanders and flanges in place; and

storing the measured calibration in the vortex flowmeter.

4. The method of claim 1, further comprising:

providing weld neck flanges on facing rims of the expanders and the bores;

welding the weld neck flanges together to join the expanders to the bores with smooth weld joints.

5. A method for finishing manufacture of a vortex flowmeter with a bore of size number N for installation between pipe flanges ranging from size number (N+1) to size number (N+2), comprising:

A. providing vortex sensor assemblies shaped to fit a standard sensor interface on a unitary flowtube;

B. providing a first unitary flowtube having the standard sensor interface, upstream and downstream flowtube flanges of size number (N+1) coupled by tapered expanders to a first bore of size number N to provide a first flange size number;

C. providing a second unitary flowtube having the standard sensor interface, upstream and downstream flowtube flanges of size number (N+2) coupled by tapered expanders to a second bore of size number N to provide a second flange size number; and

D. assembling a vortex flowmeter with upstream and downstream flanges having a selected size number by joining one vortex sensor assembly to the standard interface on a

selected one of the first and second unitary flowtubes.

6. the method of Claim 5, further comprising:

measuring a calibration of each vortex flowtube with the expanders and flanges in place; and

storing the measured calibrations in the vortex flowmeter.

7. A method for finishing manufacture of a vortex flowmeter with a selectable measurement range for installation between pipe flanges of size number N, comprising:

A. providing vortex sensor assemblies shaped to fit a standard sensor interface on a unitary flowtube;

B. providing a first unitary flowtube having the standard sensor interface, upstream and downstream flowtube flanges of size number M coupled by tapered expanders to a first bore of size number (M-1) to provide a first flow measurement range, the upstream flange;

C. providing a second unitary flowtube having the standard sensor interface, upstream and downstream flowtube flanges of size number M coupled by tapered expanders to a second bore of size number (M-2) to provide a

second flow measurement range, the upstream flange; and

D. assembling a vortex flowmeter with a selected measurement range by joining one vortex sensor assembly to the standard interface on a selected one of the first and second unitary flowtubes.

8. The method of claim 7, further comprising:

providing weld neck flanges on the expanders and the first and second bores;

welding the weld neck flanges together to join the expanders to the first and second bores with seamless joints.

9. the method of Claim 7, further comprising:

measuring the calibration of each vortex flowtube with the expanders and flanges in place; and

storing the measured calibrations in the vortex flowmeters.

10. A vortex flowmeter for installation between pipe flanges of size N, comprising:

A. a vortex sensor assembly shaped to fit a standard sensor interface on a unitary flowtube;

B. a unitary flowtube having the standard sensor interface and having upstream and

downstream flowtube flanges of size N, and a bore of size number (N-A) where A is an integer in the range 1,2 and having expanders coupling between the flowtube flanges and the bore; and

C. the unitary flowtube being formed as a unitary casting that is free of seams.

11. The vortex flowmeter of Claim 10 further comprising a flow conditioner that comprises a plate perforated by multiple holes that is part of the unitary casting.

12. The vortex flowmeter of Claim 11 wherein the plate has streamlined edges around the multiple holes.

13. The vortex flowmeter of Claim 10 wherein the flow conditioner comprises vanes having streamlined edges.

14. the vortex flowmeter of Claim 10, further comprising:

a measured calibration with the expanders, and flanges in place stored in the vortex flowmeter.

15. A vortex flowmeter for installation between pipe flanges of size N, comprising:

A. a vortex sensor assembly shaped to fit a standard sensor interface on a unitary flowtube;

B. a unitary flowtube having the standard sensor interface and having upstream and downstream flowtube flanges of size N, and a bore of a size number at least as small as (N-1), and having expanders coupling between the flowtube flanges and the bore; and

C. a flow conditioner of size number N across an opening in the upstream flange.

16. The vortex flowmeter of Claim 15 wherein the flow conditioner comprises a plate perforated by multiple holes.

17. The vortex flowmeter of Claim 16 wherein the plate has streamlined edges around the multiple holes.

18. The vortex flowmeter of Claim 15 wherein the flow conditioner comprises vanes having streamlined edges.

19. the vortex flowmeter of Claim 15, further comprising:

a measured calibration with the expander, flanges and flow conditioner in place stored in the vortex flowmeter.